

# JOHN ALEXANDER SINTON, V.C., F.R.S. Soldier, doctor and scientist

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M.D., F.R.C.P., F.R.C.Path.**

THE SIR THOMAS AND LADY EDITH DIXON MEMORIAL LECTURE

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May I say what a great privilege and honour it is for me to pay homage to the memory of a very remarkable man, a far seeing man of many parts and varied experiences who had the unique distinction of being the only holder of the Victoria Cross who was also a Fellow of the Royal Society and one who became a legend in his own life time. I shall try and present a portrait of John Sinton against the background of events and problems of his times. I first met him when I had the good fortune to work with him at Kasauli, India, while on study leave in 1932 and 1933 when investigating the aetiology of sandfly fever. I soon realised his critical mind, since on his advice I cancelled a paper already in print about a spirochaete isolated from a case of sandfly fever. How right he was when two years later the virus aetiology of sandfly fever was established. Some years before I had heard about John Sinton's bravery. In 1929



FIG 1. *John Alexander Sinton, V.C.,  
O.B.E., M.D. (honoris causa). D.S.C., F.R.S., D.T.M.  
Brigadier Indian Medical Service  
2nd December, 1884 – 25th March, 1956*

and 1930 when stationed at Jubbulpore, Central India, I became acquainted with the British Officers of the 1st (P.W.O.) Battalion of the 17th Dogra Regiment (prior to 1922 the 37th Dogras). From these and their Commanding Officer Bt. Colonel (later Major General) F. L. Nicholson, D.S.O., M.C., I had an account of the brave deeds of their war time Regimental Medical Officer, for which he was awarded the Victoria Cross\*. I have other links with John Sinton in that I was on active Service in Waziristan in 1928 – only seven years after his own experience, and then again in 1942 and 1943 when serving with the 10th Army in Persia and

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\*In 1929, when a judge at a St. John's Ambulance Competition for members of the Bengal-Nagpur Railway, I met another legendary doctor, their Chief Medical Officer, Lieut.-Colonel A. Martin-Leake, the first ever to receive a bar to a Victoria Cross.

Iraq I had an opportunity of visiting the battlefields around Kut. During this period I met Sinton again when visiting Cairo. I also had the good fortune to share an office with Brigadier Hugh Mulligan, I.M.S., Consultant Malariologist to Paiforce, who Sinton regarded as his closest friend and most long lasting collaborator. To him I am indebted for a first hand account of Sinton's scientific and professional achievements.

John Alexander Sinton was born on the 2nd December, 1884, at Victoria, British Columbia, the third of seven children of Walter Lyon Sinton and Isabella Mary Sinton (nee Pringle). His father's people, the Sintons, were of original lowland Scottish origin, had settled in Co. Armagh, Northern Ireland, for more than 250 years. The family came to Ulster in 1890, when Sinton was about six years old. The family were never in affluent circumstances. His father was a linen merchant, but it was to the hard work and devotion of his mother, for whom he had a deep affection, that Sinton ascribed any success the family may have had.

#### SCHOOL DAYS AND MEDICAL EDUCATION

Sinton was educated at the Nicholson Memorial School, Lisburn, Co. Antrim, from the age of 9-15 and at the Royal Belfast Academical Institution for the next three years when he matriculated. After a year at the Arts School of Queen's College, Belfast, where he was an exhibitioner, he obtained first place and honours. He then entered the Medical School of Queen's College, and had a distinguished academic career obtaining prizes and honours in nearly every subject or examination he went in for. He graduated M.B., B.Ch., B.A.O. (Royal University of Ireland) in October, 1908, taking first class honours in Medicine, second class honours (first place) with exhibition in Surgery, and first class honours with exhibition in Midwifery and Gynaecology. After qualifying he held the posts of House Surgeon and House Physician at the Royal Victoria Hospital, Belfast, Riddell Demonstrator in Pathology and Pathologist to the Benn, Ulster, Eye, Throat and Ear Hospitals, Belfast, and to the Mater Infirmorum Hospital. While at Queen's University, Belfast, he took the D.P.H. (Belfast) in 1910 (first place and prize), and later the same year the D.P.H. (Cambridge), and the D.T.M. (Liverpool University) in 1911, again taking first place. He took a keen interest in the University O.T.C. He applied to join the Indian Medical Service on July 7th, 1911, sitting for the entrance examination on 24th July, 1911, taking first place. He was gazetted Lieutenant 29th July, 1911.

Professor T. H. Millroy, Dean of the Medical Faculty, Queen's University, Belfast, in support of his application to join the Indian Medical Service, wrote to the Under Secretary of State for India, Whitehall, London, S.W.: "I beg to inform you that this Gentleman was one of the most distinguished students of recent years in this University. His character, conduct and professional ability are and have been of the highest. He acted as demonstrator in the Pathological Department of the University where he was most highly esteemed. I regard him as eminently fitted for the very important Service which he desires to join (Indian Medical Service)". Similar supporting letters were received from Professor W. St. C. Symmers, Professor of Pathology, and Dr. W. James Wilson, lecturer in Hygiene and Sanitary Science, both at Queen's University, Belfast.

## MILITARY SERVICE 1911-1921

### *Pre-World War I*

The Indian Medical Service offered many attractions to young doctors desiring an active life abroad. The service had two branches, one *Military* with duties in relation to the Indian Army very similar to those of the Royal Army Medical Corps in the British Army, and the other *Civil* responsible for the health of the civil population and where there were greater opportunities and wider choice for professional work, including professorships in colleges and in research. Newly commissioned officers had in all cases to serve for a minimum of two years (latterly it was six or seven) in the military branch, usually at first as a regimental medical officer, before transferring to the civil branch.

Prior to proceeding to India, Sinton was seconded for a year to study protozoology at the Liverpool School of Tropical Medicine. Here he became acquainted with Sir Ronald Ross, who had served in the Indian Medical Service until 1899. This was the era when the mysteries of tropical medicine were being unravelled by pathologists of the British and Indian Armies and it would be difficult to over-estimate the influence of men like Bruce, Ross, Leishman, Semple, Christophers and Rogers on the course of tropical medicine and pathology. It is not unlikely that his associations with Sir Ronald Ross acted as the stimulus to follow in their footsteps and solve some of the mysteries connected with the transmission and treatment of protozoal infections. But owing to the outbreak of World War I and the Afghan and North West Frontier Campaigns, it was not until 1921 – ten years after joining the Indian Medical Service – that Sinton was seconded to “Civil”.

After arrival in India, Sinton was posted to Kohat, North West Frontier Province as Regimental Medical Officer to the 31st (later 13th) Duke of Connaught's Own Lancers. He was also in charge of the Brigade Laboratory. During this period he published a number of papers, one dealing with the treatment of cholera cases by Roger's method, others on the eosinophilia in helminth infections, and the culture of malaria parasites.

On the outbreak of World War I he was medical officer with the Moveable Column, Kurram Valley in the Kohat District, and in October 1915 was posted to the Indian Expeditionary Force D (Mesopotamia) as Regimental Medical Officer to the 37 Dogra Regiment which was mobilising at Jhelum.

### *Mesopotamia Campaign*

The Regiment left for Karachi on the 29th November and embarked on the British India Steamer *Muttra* which was not very large. She also carried half the 97th Infantry and all the regimental mules and was consequently overcrowded.

A critical situation had developed in Mesopotamia, where after an initial crushing defeat of the Turks below Kut-el-Amara, Force “D” had been required to push on towards Baghdad without receiving any reinforcements or even replacement drafts.

The Mesopotamia Campaign took place in the area of South Iraq lying between Baghdad, the River Euphrates and the head of the Persian Gulf (Fig. 2). This is a flat plain unrelieved by hills or any prominent feature, described by soldiers

as two ruddy long rivers surrounded by miles of Sweet Fanny Adams. Climatic conditions are extreme. In summer the shade temperatures are over 130°F, while in winter it freezes. Cases of heatstroke and frostbite occurred in the same areas. A few hours rain would turn the area into a quagmire. In both wars casualties due to disease was the major problem in this region.

This unfortunate decision was a political blunder and partly due to over optimism and under estimation of the strength and fighting quality of the opposition. General Townsend's force retired to Kut, and was invested there.

The medical organisation has come in for much criticism. Medical units proved totally unable to deal with the large number of sick due to trying heat and insanitary camps in addition to battle casualties. The situation began to improve in May 1916 when the organisation was overhauled and fresh units arrived from France.

On 7th December the Muttra reached the mouth of the Shat-el-arab, and after being grounded three times reached Basra the next evening. The regiment was ordered forward at once to Amara to join the 35th Brigade, commanded by Brigadier General Rice and attached to the 7th (Meerut) Division.

#### *First attempt to relieve Kut*

The regiment did not land at Basra, but were transhipped into tightly packed lighters in tow which arrived at Amara five days later on 16th December, after a day at Amara the 35th Brigade commenced the march for Ali al Garbi where the Tigris relief force was concentrating. The Turks had entrenched themselves astride the River Tigris below Shaikh Saad. The Tigris Force came in touch with the enemy on 6th January. The 7th Division composed of the 19th, 21st and 35th Brigades attacked the Turkish positions on the left bank and the 28th Brigade and the 92nd Punjabis attacked on the right bank. The battle of Shaikh Saad lasted through the 6th, 7th and 8th January after which the Turks retired. Our casualties were severe; they amounted to 4,007 including 133 British Officers. Of this number, 90 British officers, 900 British other ranks and 2,500 Indian other ranks were admitted to medical units during the 6th, 7th and 8th January. In the regimental history it is recorded that the 37th Dogras had lost heavily, one British officer killed, 3 British officers, including the Medical Officer, Captain Sinton, and 4 Indian officers wounded, and 240 casualties in other ranks, 32 of

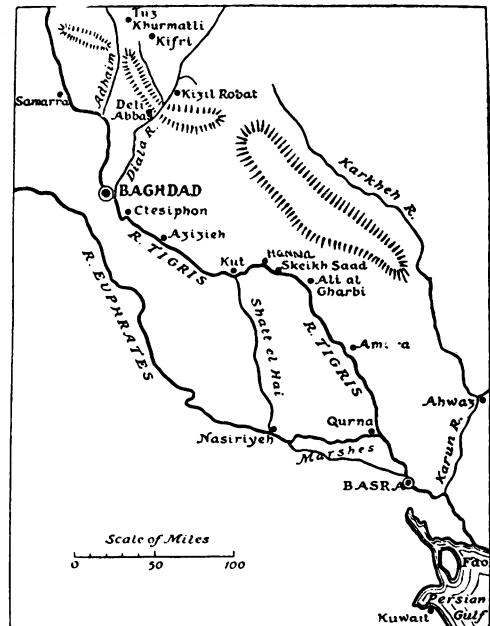


FIG. 2. Map of Mesopotamia.



FIG. 3. *Photograph of the painting of the Battle of Shaikh Saad, in the V.C. Room of the R.A.M.C. Headquarter Mess, London, showing the wounded Captain J. A. Sinton, I.M.S., attending to a battle casualty.*

whom were killed. Captain Sinton's energy and devotion to duty were outstanding. Early in the action he was shot through both arms and the side. Disregarding his own wounds, he worked magnificently, and toiled on until all the wounded, including those of neighbouring units, had been brought in and treated (Fig. 3). Much to the Regiment's satisfaction his splendid work was rewarded with a well earned V.C.

The Turkish force had retreated to a position on the Wadi river about 8 miles above Shaikh Saad, and Tigris force followed it up and attacked this position on the 13th January. The 6th Cavalry Brigade and the 7th Division were sent to try and outflank the enemy's left. This turning movement was not successful. The enemy retired from the Wadi river on the night of the 13th/14th January and took up another and stronger position 3 miles in the rear of Hanna and entrenched themselves. The British losses at Wadi were 1,601 casualties including 40 British officers.

El Hanna was a far more formidable position than Shaikh Saad and the Wadi. The operations were rendered most difficult on account of the rain and heavy mud. On the 20th January an ineffective bombardment was carried out on the Turkish lines, which were within 500 yards of our own front. The 7th Division were ordered to attack on 21st January after a short bombardment. The attack failed, and an armistice for 6 hours was arranged the next day to bring in the killed and wounded. The British casualties numbered 2,741, including 70 British officers. Owing to heavy casualties the 37th Dogras ceased to be a fighting

formation for some time. Six of the British officers were killed or wounded and the seventh suffered from bad shell shock. It is recorded that a notable feature of the action was the amazing devotion to duty of Captain Sinton who, still in much pain from his wounded arm, worked away all that night and the next day, his gallantry winning the grateful thanks of all ranks of many units. The 9th Brigade, which included the 62nd (1/1st) Punjabis was in support of the 35th Brigade during the attack. The 62nd also suffered very heavy casualties including their Commanding Officer killed. The senior surviving officer assumed command and Captain (later Field Marshal Sir Claude) Auchinleck became acting Adjutant. He told me recently how vividly he still remembered this attack and the absence of trench mortars and heavy artillery support, which contributed largely to the failure of the Hanna attack and marked the end of the first phase of the relief operations.

After the repulse at Hanna the 7th Division spent February in holding the enemy and reorganising. The 35th Dogras were joined by the 41st Dogras which had also suffered severely and were provisionally amalgamated forming the composite Dogra Battalion. On 8th March there was an unsuccessful attack by 7th Division on the Dujaila Redoubt. The number of casualties collected by medical units totalled 2,500. The 35th Brigade had to cover the retirement on 9th March. Captain Sinton again did magnificent work. Accompanied by his Dogra orderly, he insisted on going out between the lines even before dark to help the wounded Gurkhas and ensure they were brought in before the rear party moved off.

For the next seven months the strategic position remained unchanged. In May there was an outbreak of cholera which claimed the Commander of the 35th Brigade as one of the victims, but inoculation and Captain Sinton's rigorous precautions prevented the disease reaching epidemic proportions. Shortly afterwards he was invalided to India.

On 21st June 1916 the award of the Victoria Cross to Sinton was Gazetted. This award was especially well merited as it covered several actions over a period of some sixteen days' continuous fighting when he was wounded. The citation in the London Gazette is given in Figure 4 (page 23).

In the same campaign he was Mentioned in Despatches four times, and was awarded by the Russians the Russian Order of St. George.

#### *Other theatres of war, the Third Afghan War and the Waziristan Campaign*

On his return to duty he was on further active service in various theatres of war until 1921 when he transferred to the Civil branch of the Indian Medical Service. He was for a time Sanitary Officer with the acting rank of Major in the 1917 operations against the Mahsuds who were one of the two main tribes in Waziristan, the other was the Wazirs. Both tribes had been trouble makers on the North West Frontier for very many years, often aided and abetted by the Afghans. Waziristan (Fig. 5) is an inhospitable country, for the great majority the stoney fields and lean hardy flocks yielded little beyond the bare necessities of life. This led to raids and plundering of the villages in the plains. The operations were successfully concluded. Then followed a period of comparative peace from 10th August 1917 until the outbreak of the third Afghan War on the 6th

May 1919. During this period Sinton served with the East African Force (Tanganyika) and then with the East Persian Cordon Field Force, commanding a Cavalry Field Ambulance. From August 1918 to April 1919 he was Senior Medical Officer Turkistan Military Mission and commanding a Cavalry Field Ambulance with the rank of Lieut.-Colonel.

In 1919 Queen's University of Belfast conferred the honorary degree of M.D. on him in recognition of his early academic distinctions and of his valour in the field. He was also promoted brevet major in the same year.

Habibullah Khan Amir of Afghanistan was a faithful ally of the British, and it was to his personal influence that Afghanistan was kept out of the war, and the threat to peace on the frontier removed. Unfortunately, while on a shooting trip in the Laghman valley he was assassinated in October, 1918. The subsequent struggle for power leading to the accession of Amanulla as Amir, set off a chain reaction and general unrest resulting in the outbreak of the third

Afghan war on 6th May 1919 and the subsequent Mahsud Campaign of 1919-20 and the Waziristan Campaign of 1920. During these campaigns Sinton was D.A.D.M.S. Sanitation, and once again distinguished himself, being awarded the O.B.E., two mentions in despatches, and the Indian General Service with three clasps.

This was however not the end of unrest on the North West Frontier which continued until 1939. There were no fewer than seven campaigns for which medals

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FOURTH SUPPLEMENT  
TO  
**The London Gazette.**  
*Of TUESDAY, the 20th of JUNE, 1916.*

**Published by Authority.**

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WEDNESDAY, 21 JUNE, 1916.

War Office,  
21st June, 1916.

His Majesty the KING has been graciously pleased to award the Victoria Cross to the undermentioned Officer and Man:-

Capt. John Alexander Sinton, M.B., Ind. Med. Serv.

For most conspicuous bravery and devotion to duty. Although shot through both arms and through the side, he refused to go to the hospital, and remained, as long as daylight lasted, attending to his duties under very heavy fire.

In three previous actions Capt. Sinton displayed the utmost bravery.

FIG. 4. *The London Gazette*  
*Original citation of Victoria Cross*

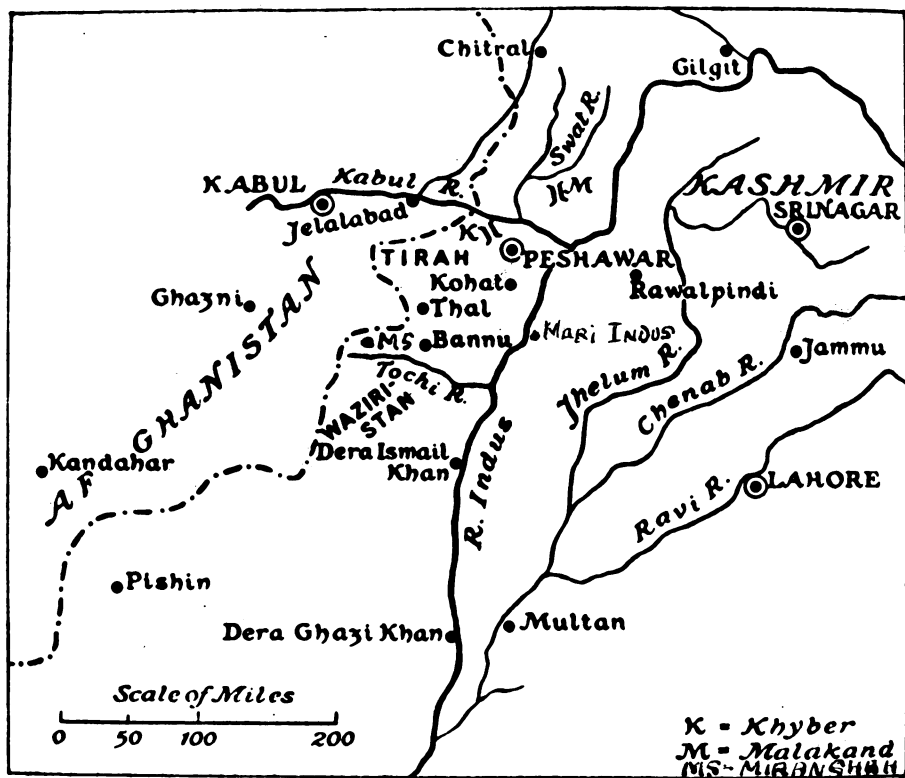


FIG. 5. The North-West Frontier



FIG 6. Column camp near Miranshah, Waziristan, 1928.





FIG. 7. Regimental aid post near Miranshah, Waziristan, 1928.

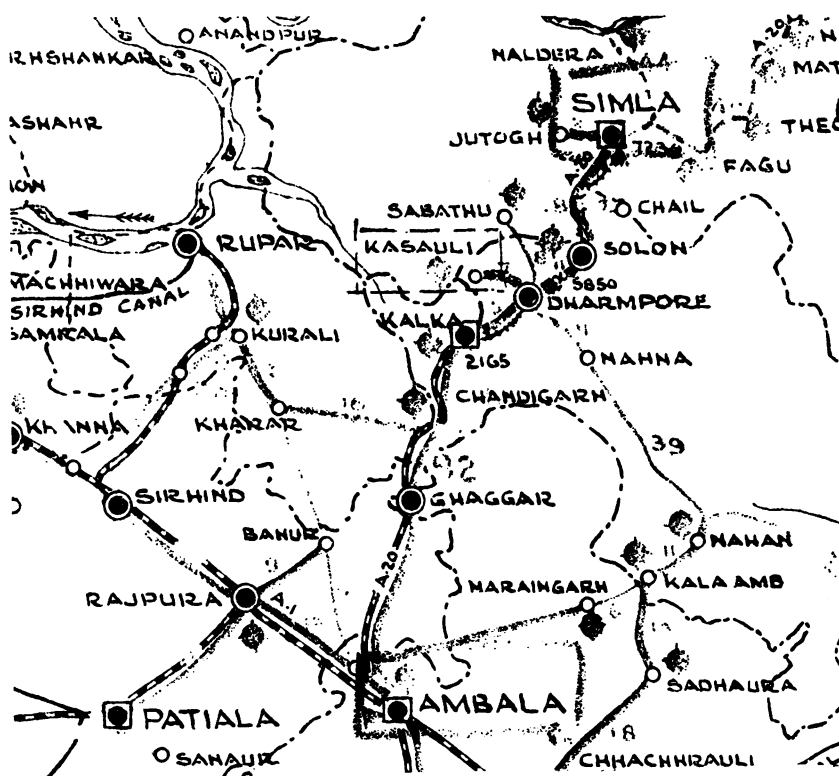


FIG. 8. North-east Punjab showing Simla-Kasauli region.

or clasps were awarded. In March 1928 I was R.M.O. to the 6th D.C.O. Lancers as part of Bannu Column. Conditions then were very similar to those existing when Sinton served there some seven years earlier. We had to carry our casualties with us; any left would most likely have been mutilated. The photograph (Fig. 6) of the column camp and the regimental aid post (Fig. 7) near Miranshan, 37 miles west of Bannu Cantonment, will I hope give some idea of the terrain that Sinton encountered.

#### CIVIL EMPLOY 1921-1936

After a period of leave home, during which he worked under Professor Newstead studying sandflies of the genus *Phlebotomus* he must have had a personal interest in this pest, since he must have been frequently bitten in Waziristan, and under Professor Thomson on protozoology, Sinton returned and was taken on the cadre of the Medical Research Department, being attached to the Pasteur Institute, Kasauli from 8th February to 19th July 1921.

Kasauli where Sinton was to carry out his investigations for the next 15 years until his retirement in 1936 is a hill station 46 miles south of Simla (Fig. 8): too close to administrative authority for some officers! The Central Research Institute at Kasauli was the Government of India's premier laboratory for medical research and vaccine production. It was administered directly by the Government of India. Colonel Sir Richard Christophers was Director for about ten years. He was succeeded by Lt.-Col. (later Major General Sir) John Taylor who held the post for about eight years, and was in turn succeeded by Colonel H. Mulligan, I.M.S., who was Director from 1943 until partition in 1947. It is to him that I am greatly indebted for much of the information during this period of Sinton's career.

The Pasteur Institute of India to which Sinton was attached in 1921 occupied a separate site in Kasauli from about 1903 until 1936 when it was absorbed into the Central Research Institute and housed in a new building on its site. The old building became a sanatorium. Lt.-Col. (later Major General Sir) Gordon Covell was the last director of the independent institute. It is of interest that Lt. Col. Sir David Semple who was commissioned in the Army Medical Service in 1883 was Director of this Institute from 1900 to 1905 and then Director of the Central Research Institute from 1905 to 1913. This institute was administered by a governing body, and financed partly by endowments and partly by the sale of anti-rabic vaccine.

The Malaria Survey of India was housed in buildings belonging to the Central Research Institute, but in all other respects independent being financed and administered by the Indian Research Fund Association, a body established in 1911, which received a special Government grant, but was largely independent and in many ways resembling the Medical Research Council in England. In 1916 a malaria organisation for India had been put forward and implemented following the Imperial Malaria Conference held at Simla in that year. A Central Malaria Committee and a Provincial Malaria Committee for each of the eight Provinces of India was formed. A Central Malaria Bureau was established at Kasauli under the Central Committee. There collections of mosquitoes, and a reference library were started.

When Sinton returned to India the Central Malaria Bureau had been re-

established at Kasauli, and there were a number of research projects in progress. One of these was the Quinine and Malaria Enquiry, financed by the Indian Research Fund Association. On 20th July 1921 Sinton was transferred from the Pasteur Institute to be in charge of this enquiry. In 1925 sanction was obtained for the establishment of a Central Malaria Organisation for India to be established at Kasauli and to be known as the Malaria Survey of India. Sinton was appointed as the first director, and brought together all the enquiries and investigations under the new organisation. He was director until his retirement in 1936, when he was succeeded by Lt. Col. Gordon Covell, I.M.S. In 1937 the Government of India decided to take over the public health and advisory functions of the Survey, and the whole organisation, now renamed the Malaria Institute of India, was moved to Delhi. As Director, Sinton was ex-officio a member of the Scientific Advisory Board of the Indian Research Fund Association. He was also a member of the Malaria Commission of the League of Nations and Co-ordinating Officer for this body. In 1929 the Malaria Survey issued the first number of its journal, Records of the Malaria Survey of India, now the Indian Journal of Malariology.

Kasauli also accommodated two completely separate military laboratories administered by G.H.Q., India. One the Enteric Laboratory concerned with the identification of organisms of the salmonella group isolated from military cases of enteric fever and the other the Military Food Laboratory dealing with the control of the quality of food supplies for British and Indian troops. Finally there was the British Military Hospital, administered through military channels, and in which was located the Malaria Treatment Centre for India always under the command of an R.A.M.C. medical specialist. This Centre was started in 1924 for the treatment of chronic relapsing malaria cases in British troops. Sinton had no administrative responsibility for the Centre, but was adviser on the treatment to be given, as he in fact laid down the various regimens of treatment. Follow up blood films was done in the Malaria Survey. Not unexpectedly there was at times a clash of personalities. Sinton was senior (in terms of service) to the various specialists in charge of the centre and had their respect, but there were differences from time to time. Nevertheless the work done at the Centre was of the greatest importance and as a result relapsing malaria among British troops practically ceased.

#### SCIENTIFIC AND PROFESSIONAL ACHIEVEMENTS IN INDIA

Sinton published more than 200 scientific papers, several in collaboration with others, but in all his genius was always evident in design and direction. He was a big and generous colleague, putting the name of the junior author first when he thought they had made the major contribution. His papers dealt with various aspects of malariology, chemotherapy, parasitology, immunology, laboratory and survey techniques and social aspects. He also published 36 papers on Indian species of *Phlebotomus*, of which he became the leading authority.

It was in Kasauli that he met and married Edith Seymour Steuart Martin on 19th September 1923, and where his daughter was born on 9th December 1924.

#### *Chemotherapy*

This has been referred to earlier. When the Malaria Treatment Centre was

started, the routine course for malaria was 30 grains of quinine a day for 90 days. I can assure you from personal experience, this prolonged course of quinine was unpleasant and one suffered from transient deafness and giddiness. As other potentially useful antimalarial drugs became available Sinton undertook controlled research on their possible role in treatment and laid down certain rules as guide lines for the Centre and worked out the requirements for an ideal drug. These are in general use today, but it is doubtful if it is known that they emanated from Sinton.

Plasmoquine (later called pamaquin) was introduced in 1926. This drug was a synthetic compound discovered by workers at the Bayer Chemical Laboratories in Germany in 1924. The effectiveness of this new compound was first demonstrated in canaries infected with *P. relictum*, the parasite of bird malaria. Sinton was the first to point out its value in reducing the relapse rate, and worked out that quinine and plasmoquine combined gave infinitely superior results after a much shorter course. A large scale trial was carried out in 1929 and 1930 in four hyperendemic centres in India. Jubbulpore in central India was one of these, and during this period about a thousand cases were treated. As a result of this extensive trial, the long routine course of quinine treatment for malaria was discontinued and the much shorter and more effective combined quinine-plasmoquine therapy substituted in India.

Sinton added greatly to our knowledge of the value of the newer antimalarial compounds as they became available. Atebrin and plasmoquine was found to be too toxic. No work was done at the Centre on atebrin prophylaxis, and it was not until 1941-42 that the work of Sir Neil Hamilton-Fairley at Cairns, Australia, demonstrated its great value as a prophylactic.

#### *Malaria Parasites of Man*

Badly prepared stains and poor staining techniques were and still are the major cause of faulty diagnosis in cases of suspected malaria. Sinton's work was notable for the many contributions he made to improve techniques, particularly the preparation and use of thick films, interpretation of the appearances seen and their use in the identification and enumeration of parasites. In collaboration with E. L. Hutton and P. G. Shute he published papers on infections with *P. ovale*. He also investigated the properties of malarial pigment.

#### *Malaria Parasites of Monkeys*

Lieut.-Colonel R. Knowles, I.M.S., Professor of Protozoology at the Calcutta School of Tropical Medicine, had discovered a chronic malarial infection in an Iru monkey imported from Malaya which after subinoculation into Rhesus monkeys, the animals died of a fulminating infection in 4 or 5 days. At that time Mulligan was trying to find an experimental model in a mammal for work on malaria. He had examined large numbers of Rhesus monkeys in Northern India, but never found anything resembling a malaria parasite. In Calcutta he purchased several Iru monkeys, all of which proved to be infected, and eventually proved to be suffering from a mixed infection. One of the parasites he named *P. knowlesi* in honour of its discoverer. Sinton, on his return from a year's study leave, with great enthusiasm

and drive joined Mulligan in his researches, and together from 1930-34 they carried out intensive investigations on the plasmodial infections of the lower primates of the old world. By their studies they were able to learn much about the mechanism of immunity in malaria and the implications of multiple and super-infection and to estimate the effect of treatment on immunity.

#### *Sandflies, Cutaneous Leishmaniasis and Kala-Azar*

Sinton's collection of *Phlebotomus* consisted largely of specimens he had caught himself from all over India. When he travelled by train he jumped off at every stop and ran to the "Gents" on the platform to search for sandies. He chose this location because the humidity there was always higher than in other buildings. Between 1923 and 1933 he published 36 papers dealing with the Indian species and also descriptions of species from other countries. Of the 27 species described 16 were new to science including one from Peshawar named by him *P. hodgsoni* in honour of Colonel Hodgson, I.M.S., A.D.M.S. Peshawar District, who had initiated an investigation into the aetiology of sandfly fever. Sinton's descriptions were thorough, dealing with both external and internal structures. Some of the important characteristics used in identification of the different species were the structural features of the pharyngeal armature, and in the female, characteristics of the spermathecae. What delicate dissection this involved!

Besides describing oriental sore in Russian Turkestan in 1921, Sinton in collaboration with Col. H. E. Shortt, I.M.S., was the first to record cutaneous leishmaniasis in a dog in India; canine leishmaniasis having been previously described only from the Mediterranean area.

He was the first to make out a case for the transmission of kala-azar by *phlebotamus*. He noticed that the distribution of kala-azar cases coincided almost exactly with the distribution of *P. argentipes*. The Kala-Azar Commission working in Assam failed to incriminate *P. argentipes* as the carrier, but final proof came later after work by Colonel H. E. Shortt and his co-workers.

#### FIRST PERIOD OF RETIREMENT 1936-39

Sinton retired prematurely in 1936. In his last Confidential Report dated 17th April, 1936, Major General C. A. Sprawson, Director General I.M.S., writes: "Lt.-Col. Sinton has an international reputation as a malariologist. He is most efficient and zealous. He has conducted the Malaria Survey of India to my satisfaction: he conducts classes in malaria training most successfully: and he continues to conduct research work in malaria which is most valuable to India and the world at large." This is fair comment of the international status he had reached in the relatively short period of fifteen years. Much of his later work especially that on *P. ovale* and the newer antimalarial compounds was carried out during this period in England when he worked as Manson Fellow of the London School of Hygiene and Tropical Medicine and at the Ministry of Health Malaria Laboratory at Horton, where unique conditions for such researches existed.

#### SECOND PERIOD OF MILITARY SERVICE 1939-45

On the outbreak of war Sinton then aged 54½ still being on the reserve of

officers, was recalled for duty in India and commanded a hospital. But on reaching the age of 55 was placed on the retired list and returned to U.K., joining the Home Guard as a private. He was, however, re-employed by the War Office and appointed Consultant Malariologist to East Africa Force on the 30th October 1940, and arrived in East Africa in March 1941. In May 1941 he was transferred to Middle East Forces in the same capacity and held this appointment until April 1943, being given the local rank of Brigadier in March 1942, and touring extensively in many countries which were then under Middle East Command. When Sinton arrived in the Middle East, Mulligan, his old collaborator, was running a Malaria School in Moascar, as O.C. No. 2 Malaria Field Laboratory. The unit was shortly afterwards transferred to Sarafand in Palestine, and set up another Malaria School, and a few months later this moved to the Lebanon. Sinton was a frequent visitor to the unit, but his forthright manner was inclined to upset some senior combatant officers. On 9th December 1941, while crossing Staria Kasr el Ami, Cairo, he was knocked down by a motor car and concussed, and also sustained a severe fracture of the right lower jaw. His close friends say that he was never quite the same afterwards. On vacating this appointment he returned to U.K. on 15th June 1943, and retired with the Honorary Rank of Brigadier on 23rd August 1943, but shortly afterwards on 7th September 1943 was re-employed as Consultant Malariologist to the War Office. From March to July 1945 he was on an inspecting and advisory tour to see malaria conditions in Assam, Burma, India and Ceylon and then on to Australia, New Guinea, the Solomon Islands and the Moluccas. Sinton was finally demobilised on 31st August 1945. When he finally retired at the age of 60 he had served for over 30 years of which over a third was spent on active service. But before he retired he made several contributions which were published as helpful reports or circulars by the Army, the Ministry of Health and the Ministry of Transport, giving information and instructions regarding precautions against malaria and treatment. These were written with the same meticulous care which is so characteristic of his published work. He received a Mention in Despatches on 23rd June 1943 for his services in the Middle East, and was awarded the 1939-45 Star, Africa Star, Burma Star, Defence Medal and the 1939-45 War Medal.

#### FINAL RETIREMENT 1945-56

After his retirement for the fourth time Sinton bought a beautiful place near Cookstown, County Tyrone, in Northern Ireland. He cut himself from his previous activities and instead began to take part in public affairs, especially those of his old University. He became a member of the Senate in 1948, was Pro-Chancellor in 1952 and President of Queen's University Association 1953-54. He was President of the Queen's University of Belfast Services Club in 1947; Vice-President of the Old Instonians Association 1946-52, and President 1952-53. He was also Honorary Colonel of the University Officers Training Corps, a J.P., High Sheriff for County Tyrone in 1953 and the Deputy Lieutenant in 1954.

In addition to his military honours and awards which have already been referred to, Sinton both during his service and during retirement received academic distinctions and awards for his many notable contributions to science and tropical medicine. In addition to the M.D. (*Honoris causa*) in 1919, Queen's

University, Belfast, also conferred on him the D.Sc. in 1927. It was for his work on malaria and kala-azar that Sinton was elected F.R.S. in 1946, and in the same year he was Robert Campbell Orator and Medallist of the Ulster Medical Society. He was awarded the Arnott Memorial Medal of the Irish Medical Schools and Graduates Association in 1917, the Chalmers Memorial Medal of the Royal Society of Tropical Medicine and Hygiene in 1929, the Bissett-Hawkins Medal of the Royal College of Physicians in 1944, the Mary Kingsley Medal of the Liverpool School of Tropical Medicine in 1949, and from the Egyptian Government, the Anti-Gambia Memorial Medal in appreciation of his services in the malaria epidemic of 1950. Only a few days before his death the Royal Society of Tropical Medicine and Hygiene had decided to award him their highest honour – The Manson Medal. This was presented to Mrs. Sinton by the President, Professor R. M. Gordon, at the meeting of the Society on 21st June, 1956. At her request, Brigadier Sir John Boyd, Sinton's old friend and colleague, replied on her behalf.

He was made an Honorary Member of the Ulster Medical Society in 1920, and an Honorary Member of the National Malaria Society, U.S.A., in 1930. From 1937–46 he was President of the Malaria Commission of the League of Nations, and from 1943–46 a Member of the Malaria Commission of the Medical Research Council. He was a Vice-President of the Royal Society of Tropical Medicine and Hygiene from 1945–47, and made an Honorary Fellow in 1953 of the newly formed National Society of India for Malaria and Other Mosquito-borne Diseases.

As to his personal qualities, Sinton in his heyday was a glutton for work. He regularly worked 6½ days a week and seldom less than 12–15 hours a day, and was indefatigable until whatever work he had in hand was completed. He was uncompromising in his demands, and as a result was a constant thorn in the flesh to higher authority. Malaria was to him the most important thing in the world, and it should be a first priority. Sinton was very popular socially, and could be the life and soul of a party. He was also a very good bridge player. One cannot improve on the description of Sinton's character written by J.S.K.B. in the Obituary in *Lancet*, April 7th 1956:

“He was forthright and outspoken, and did not suffer fools gladly. He loved argument, and his eyes shone with the light of battle. He was indeed a formidable adversary, particularly as he was almost invariably right. But he was the kindest and most generous of souls, whose mind never entertained a mean thought, and whose gospel in life was to give ungrudgingly of his best; a loyal friend in whose company one could never be dull.”

Sinton was a man of outstanding physical and moral courage and no respecter of higher personages. His V.C. was no flash in the pan, and there were other occasions when his courage was to be seen. I am indebted to Colonel H. Mulligan for those two anecdotes. He writes: “I remember one Sunday morning in Kasauli getting a telephone call at the laboratory to go at once to Sinton's house, where I was living at the time. I dropped everything and ran the mile or so to the house. The servants' quarters had collapsed under the heavy rains, burying three young children. When I arrived Sinton was digging furiously among the debris with his bare hands with rocks and rubble dropping all round him; he had unearthed one child, and I was instructed to start artificial respiration. In the end

all three were dug out and two of them survived. I shall never forget the sight of Sinton drenched with rain, covered in mud, bleeding from a scalp wound, and digging feverously like a terrier after a fox."

"On another occasion a krait (one of the most poisonous snakes in India) was about to drop off a hanging basket on to a departing guest. In a flash Sinton had it by the back of the neck. He admitted to being frightened on such occasions, but his sense of *duty* was so strong, that he never hesitated to put himself at risk."

He was able in his retirement to have time for hobbies he neglected during his busy life overseas, and was very enthusiastic with his gardening, fishing and ornithology. These were probably the happiest days of his life, but the last few years were marred by the considerable suffering from an incurable disease borne with indomitable courage.

He died on March 25th 1956, at his home in Cookstown, Northern Ireland, at the age of 71, and was buried with full military honours among the mountains near his home.

There is no more fitting finale to the Sinton saga than an adaptation of a quotation from the speech made by Henry Lee about George Washington in the House of Representatives in 1799.

Brigadier John Sinton, V.C., F.R.S., was first in war, first in peace, first in the hearts of his colleagues, in fact first in everything he undertook, but above all, first in his own heart was concern for the sick and wounded soldier and sepoy, and his love for children and animals.

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*The History of the 1st (P.W.O.) Battalion, The Dogra Regiment 1887-1947* by C. T. Atkinson printed by the Camelot Press, Southampton in 1950, and the *Medical Services General History, Volume IV*, published by H.M. Stationery Office, 1924 provided the details about the battles for the relief of Kut and the circumstances for the Victoria Cross was awarded to Sinton. From the *Frontier 1839-1947* by Major-General J. G. Elliott, printed by Cassell, London in 1968, I obtained details about the Third Afghan War and the subsequent Waziristan Campaigns.

I am also indebted to *Field Marshal Sir Claude Auchinleck, G.C.B., G.C.I.E., C.S.I., D.S.O., O.B.E.*, for his vivid account of the Battle of El Hanna. But my greatest obligation is to *Colonel H. W. Mulligan, C.M.G., M.D., D.Sc.*, who was Sinton's oldest friend and collaborator, without whose considerable help this would not have been possible.

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